

Ministry of Earth Sciences (MoES)
Summary of Important Developments –June, 2016

1. **Important policy decisions taken and major achievements during the month:** Provided in Annex I.

2. **Important policy aspects / matters held up on account of prolonged Inter- Ministerial consultations/ delays, etc.:** Nil

3. **Compliance of COS decisions:**

S.No.	Number of COS decisions pending for compliance	Proposed action plan/timelines	Remarks
1.	<p>Dt 14/08/2014 PROPOSAL FOR KRILL FISHING</p> <p>MoES, in collaboration with MEA, will study the experience of different countries showing varied interest in krill fishing so that India could learn from their experiences. MEA, in collaboration with MoES, will examine and identify the countries with which India can collaborate for krill fishing. MoES will ascertain the interest of Indian industry in krill fishing and also explore the feasibility of Indian companies collaborating directly with foreign companies MoES will study legislations enacted by other member countries before finalising the draft legislation as part of international convention obligations.</p> <p>MoES will bring out a paper on krill fishing giving a detailed account of demand analysis, financial viability, interest of industry, experiences of other countries, criteria for fishing license, existing knowledge gap, etc. Thereafter, the CoS will meet again to decide whether India should engage in commercial krill fishing.</p>	<p>The Ministry has examined the aspect of Krill fishing. Japan & Norway have developed expertise and these countries have been tentatively identified for collaboration on Krill fishing. Their experiences have been obtained. Indian Industries have been approached for Krill fishing to ascertain their interests. However, so far we have not received any response. The draft paper is prepared and suggestions of Cabinet Secretariat have been obtained.</p>	--

4. **Cases of sanction for prosecution pending in the Ministry for more than three months:** Nil

5. **Particulars of cases in which there has been a departure from the Transaction of Business rules of established policy of the Government:** Nil

6. **Status of implementation of e-Governance :** Under process/ being implemented

7. **Status of Public grievances:**

No. Of Public Grievances redressed during the month	No. Of Public Grievances pending at the end of the month
31	24

8. **Information on the specific steps taken by the Ministry/Department for utilization of the of the Space Technology based tools and applications in Governance and Development:** Potential Fishing Zone advisories are generated using the satellite derived parameters viz. Sea Surface Temperature, and Chlorophyll. Further, data from Global satellite data are used on continuous basis for generating short range and medium range weather forecasts.

Annex-I

Important policy decision taken and major achievements:

India Meteorological Department issued a long range forecast, the details of which are provided below:

Quantitatively, the season(June-September) rainfall for the country as a whole is likely to be 106% of the long period average (LPA) which remains unchanged from the first stage operational forecast issued on 12th April, 2016 with a model error of $\pm 4\%$. The LPA rainfall over the country as a whole for the period 1951-2000 is 89 cm. The season rainfall is likely to be 108% of LPA over North-West India, 113% of LPA over Central India, 113% of LPA over South Peninsula, and 94% of LPA over North-East India all with a model error of $\pm 8\%$. The rainfall over the country as a whole is likely to be 107% of its LPA during July and 104% of LPA during August both with a model error of $\pm 9\%$.

System of Air Quality and Weather Forecasting Research (SAFAR) provided scientific & technical assistance to Rajasthan Government in development of Air Quality MobileApp "RajVayu" which was dedicated to nation by Hon'ble Chief Minister of Rajasthan for sharing information about current air quality index and weather information of Jaipur, Jodhpur and Udaipur during World Environmental Day-2016.

Minimum Government, Maximum Governance:

Agromet Advisories are being communicated to 191.2 lakh farmers of the country through mobile SMS.

Adverse weather SMS warning are being sent through mobiles to State Govt. officials / Disaster related officials /Central Govt. Organization/Common men.

Daily forecast along with warning and city forecast for many cities are disseminated through email to all users including state authorities, electronic and print Medias.

Atmospheric Observation Systems Network

Observation Type	Target	Commissioned up to June, 2016	Data reporting
Automatic Weather Station (AWS)	675	681	433
Automatic Rain Gauge(ARG)	1350	1327	489
GPS Sonde	10	42	39
Doppler Weather Radar(DWR)	23	19	19
Ozone	17	15	15
Black Carbon Monitoring Systems (Aethalometer)	16	16	16
Other Rain Gauges excluding ARG and AWS	-	-	2378
Aviation	--	72	72
Agro-meteorology	267	264	160

@ Data received from various agencies viz. Air Force, Railways, Central Water Commission, State Agriculture, State Irrigation and ESSO-India Meteorological Department (IMD)

Atmospheric Processes, Modeling and Services

Weather System: A depression formed over northeast Arabian Sea (AS) in the afternoon of 27th June, 2016. It moved initially westwards, then south-southwestwards and weakened into a well marked low pressure area over northwest and adjoining westcentral AS in the morning of 29th June. As the depression moved westwards away from Indian coast, there was no adverse weather along the west coast of India due to this system.

The southwest monsoon set in over Kerala on 8 June and further advanced over most parts of the country outside Punjab, Haryana and most parts of West Uttar Pradesh and some parts of East Rajasthan and Gujarat till 28 June 2016. The northern limit of monsoon passed Lat. 22.00N/ 60.00E, 22.00N/ 65.0 E Dwarka, Vallabh Vidhya Nagar, Sawai Madhopur, Gwalior, Lucknow, Pantnagar, Deharadun, Una and Jammu as on 30 June 2016.

Heat wave conditions prevailed at a few places over Rajasthan and at isolated places over Punjab, Haryana and West Madhya Pradesh during first fortnight of June.

Fairly widespread to widespread rain with scattered thunderstorm/lightning and isolated heavy to very heavy falls were observed over Bihar and isolated heavy over East Uttar Pradesh on 21 & 22 June 2016.

Fairly widespread to widespread rainfall was observed along west coast and over north-eastern states; scattered to fairly widespread over peninsular, east and central India and scattered over northern plains during many days of June.

Six western disturbances affected western Himalayan region and caused scattered to fairly widespread precipitation on some days of June.

The data assimilation system of the global forecast system has been upgraded to T1534 (SL) which has a horizontal resolution of about 13 km.

A tropical cyclone tracking system has been successfully implemented for plotting the individual member tracks and the mean track of the ensemble prediction system of National Centre for Medium Range Weather Forecasting(NCMRWF). The system also plots the strike probability of the tropical cyclone.

Meteorological Centre (MC) Ahmedabad has been awarded ISO 9001:2008 Certification.

Rainfall in June, 2016

Rainfall during the month of June, 2016 was excess in 6, normal in 18, and deficient/scanty in 12 of 36 meteorological sub- divisions. The rainfall for the country as a whole for the month of June, 2016 has been recorded as 145.4 mm (-11%) against the normal rainfall for the month as 163.6 mm.

Monsoon Weather Reports, Maps and Crop Yield Forecast

Climate Diagnostics Bulletin of India for April 2016 has been brought out.

Daily all India Weather Summary and Weekly Weather Reports are being brought out on routine basis.

Four weekly and cumulative Standardized Precipitation Index (SPI) maps were prepared for the weeks ending 1st, 8th, 15th, 22nd and 29th June 2016.

Geoscience Research

Seismological Observational Network

Observation Type	Target for XII Plan	Commissioned so far	Data reporting during the month
Seismic stations	130	95	66
GPS stations	40	27	24

Earthquake and Tsunami monitoring

Earthquake: 19 earthquakes were monitored in the Indian region out of which 2 events were greater than magnitude (M) of 5.0.

Tsunami: 3 major seabed earthquakes (M> 6) with a potential to generate tsunami were monitored. This information was provided within 12 minutes of occurrence of the earthquake for 2 events and it took more than 20 minutes in respect of the remaining event.

Ocean Observation System

Type of Platform	Target	Commissioned till June, 2016	Data received during June, 2016
Argo Floats	200	280	132

Drifters	150	92	11
Moored Buoys	16	19	19
Tide Gauges	36	30	24
High Frequency(HF) Radars	10	10	9
Current Meter Array	10	11	5
Acoustic Doppler Current Profiler(ADCP)	20	21	18
Tsunami Buoys	7	7	6
Wave Rider Buoy	16	10	9

*The remaining floats/drifters have completed their life time and as such no data can be received from them.

Ocean Science Services

No	Types of forecasts	No. of advisories issued during the month
1	Integrated Potential Fishing Zone (PFZ) advisories (Sea Surface Temperature(SST), Chlorophyll., wind)	16
2	Integrated Potential Fishing Zone (PFZ) advisories (Sea Surface Temperature(SST), Chlorophyll., wind)	16
3.	Ocean State Forecast(OSF)-Wave, Wind, Currents, SST, MLD and D20 forecasts	31
4.	Near Real time global ocean analysis (5-day averaged)	6
5.	Real time global ocean analysis (daily)	31
6.	Coral Bleaching Alert System	10

Wave surge forecast was issued for West Bengal during June 10-11, 2016, and for entire east coast of India on June 19, 2016.

Ocean State Forecasts was provided for Sagar Kanya engaged in Tsunami buoy deployments during May 16-28, 2016.

Swath Bathymetric Survey of Exclusive Economic Zone

An area of 22,000 square km was surveyed with acquisition of bathymetric data.

Capacity Building and Outreach

In accordance with the agreement of cooperation between the Indian Institute Tropical Meteorology(IITM) and the International Centre for Theoretical Physics (ICTP), Trieste Targeted Training Activity (TTA): "Towards Improved Monsoon Simulations", was held at Trieste, Italy during 13-17 June 2016. About 30 participants from different countries in the world including 10 participants from IITM attended the Targeted Training Activity at ICTP, Trieste, Italy. More than 10 speakers from different parts of world including IITM scientist delivered lectures for training.

Memorandum of Understanding (MoU) was signed between IITM and Hari Singh Gour University, Sagar, Madhya Pradesh on 12th June 2016 at Bhopal for establishment of atmospheric test bed site.

International Training Centre for Operational Oceanography (ITCOcean) conducted a course on 'Tides and Tidal Data Analysis' during June 13-17, 2016. Twenty eight participants from eight national institutions have attended the course. ITCOcean is set up by Indian National Centre for Ocean Information Services(INCOIS), an autonomous institute under Ministry of Earth Sciences in Hyderabad. The Centre aims at promoting the development and optimization of scientific base, technology and information system for operational oceanography at national, regional and global levels.

"Prithvi", the Hall of Residence of Indian Institute of Tropical Meteorology at Pune was inaugurated on 23rd June 2016. "PRITHVI" is a 10-storied building comprising of 215 single occupancy rooms for students and researchers and 12 guest rooms and is well-equipped with essential facilities such as Canteen, Wifi, Gymnasium, Outdoor Play area, Doctor's Chamber, Warden Residence etc. The Prithvi will cater and support students, trainees, researchers and scientists from various parts of India and abroad, who would be visiting for research activities.

Yoga day has been observed on 21st June, 2016 in the Ministry and its attached/subordinate offices and autonomous institutes.

Promotion of Official Language

The Second Sub-Committee of Parliamentary Committee on Official Language visited Flood Meteorological Office, Jalpaiguri during 20.06.2016 -21.06.2016, for inspection and to assess the status of implementation of official language policy.

Utilization of Ocean Research Vessels during the month

Vessel	Days at Sea / Utilization	Maintenance/ Inspection /Scientific Logistics / Cruise Préparation	No. of Cruise	No. of Port Calls / Port Stay/ Statutory survey
Sagar Nidhi	0	30(Repair of Azimuth thruster motor)	-	-
Sagar Manjusha	18	7	3	5
Sagar Purvi	0	30(Hull plate repair and cruise preparation)	2	6
Sagar Kanya	22	-	2	8
Sagar Sampada	0	30 (Dry dock)	-	-

Publications in Science Citation Index(SCI) journals and PhDs awarded

Subject	Publications			Ph.Ds		
	April-May,2016	June, 2016	Total	April-May,2016	June, 2016	Total
Atmospheric Sciences	32	19	51	-	1	1
Ocean Science and Technology	3	11	14	-	1	1
Polar Sciences	13	1	14	-	-	-
Geosciences and resources	-	6	6	-	-	-
Total	48	37	85	-	1	1